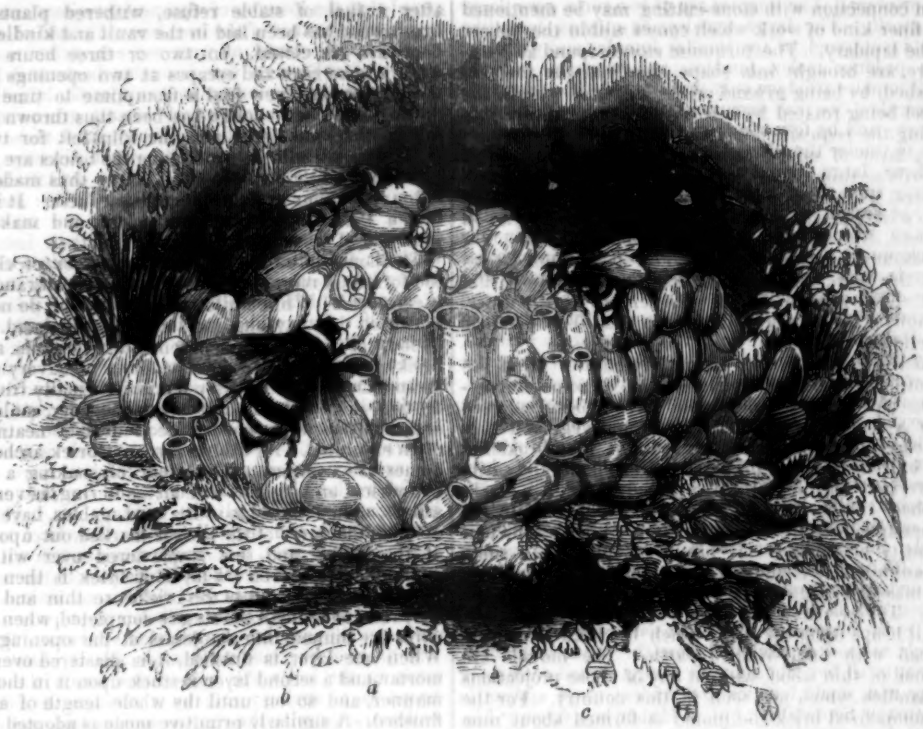


[Nest of the Common Humble-Bee (Bombus terrestris).—*a*, Male; *b*, Large Female; *c*, Worker.]

CURIOSITIES OF BRITISH NATURAL HISTORY.

The Humble-Bee.

The development of instinct, as manifested by the operations and in the economy of animated beings, affords much matter for reflection and observation. By instinct we mean that innate power or principle impelling to the performance of works necessary either to the well-being of the individual or the species, and which rules, irrespective of experience, in the mode adopted, in the materials selected, in the site, and arrangement; which directs in the observation of time, in attention to size, figure, and numbers, and which bears alike upon the present and a future day, leading to results which appear to be those of reason, reflection, and forethought, involving also a knowledge of the past. No living animal, not even man, is destitute of instinct: we see its manifestations in the infant, but as reason dawns it becomes weaker and weaker; and, indeed, in such of the lower animals as are susceptible of education we find it shaken by what we may well term artificial education, which, as in the dog, calls forth limited and imperfect trains of reasoning, simple deductions of effects from causes, the result of experience and discipline; and, more than this, we see the civilization thus effected, and kept up, influence the character and propensities of a whole race—we see it affect their physical structure.

The results of pure instinct are in no animals so wonderful, so interesting, as in insects. Birds, indeed, cannot but attract our notice: who can examine their nests, so various in form and materials, so artfully constructed, without feelings of pleasure? Look at the nest of the Tailor-bird, a soft couch in a leafy cradle suspended at the end of a slender twig; look at the hanging nests of the Pensile Weaver-bird (and how many could we not enumerate?); and acknowledge reader, with me, that they are admirable examples of the operations of instinct.

Still, however, as we have said, even more wonderful exemplifications of the governing principle of instinct are to be found in the works of insects. The waxen architecture of the hive-bee (Apis mellifica), its habits and economy, have been the admiration of intelligent minds in all ages, and the greatest philosophers have applied themselves to the elucidation of its history, and of the principles on which it proceeds to build its hexagonal cells with such accurate precision.

It is not, however, to the hive-bee that we are about to invite attention, but to a relative of less pretensions, whose works are comparatively simple, yet far from being without interest. We allude to the common Humble-bee, which all the summer long we see wandering over clover-fields, and through gardens, busy with every flower, and assiduously trying nectary after nectary with its proboscis. If one of these bees be watched with a little patience and some tact, it may be traced to its retreat, where it has laboured in constructing cells and laying up a store of honey. The domicile of the humble-bee is a simple excavation in some bank, a little chamber of about six or eight inches in diameter, to which leads a long winding passage, capable of admitting of the ingress and egress respectively of two bees at the same time. Some species, as the Bombus muscorum, select a shallow excavation which they dome over with a felt of moss or withered grass, lined with a coat of wax to render it waterproof; but the Bombus terrestris makes or enlarges a subterranean vault, a foot beneath the surface of the ground, and in this is the colony established. The population, however, is not numerous, seldom exceeding one or two hundred, and may be divided into *females*, *males*,

and *workers*.' The females are of two sorts, *very large* and *small*. The large females, or queens, look like giants compared to the smaller females and workers; they produce males, females, and workers, but the small females produce only male eggs. The large females, then, we may regard as the founders of every colony; and by following up the details we shall be able to render the plan clearly intelligible.

These large females, in an established colony, emerge from their pupa state in the autumn, and pair in that season with males, the produce of the small females which have previously acquired their due development. Now on the approach of winter these large females, the pairing time over, retire each to a little snug apartment, lined with moss or grass, and separate from the general vault, passing the cold season in a state of torpidity. Early in the spring they awake, issue forth, and take different directions, seeking for some convenient spot in which to begin their labours. At this time of the year large females may be often observed exploring every cavity, hole, or crevice, in banks or on the ground; they are seeking a fit site for their operations. We will now suppose one of these queens to have formed and established herself in her chamber; she begins to collect honey and pollen, and constructs cells in which her eggs are to be deposited. So rapidly are the latter built, that to make a cell, fill it with honey and pollen (the food of the young), commit one or two eggs to it, and cover them in, requires little more than half an hour. Her first and most numerous brood consists only of workers, which, as soon as excluded from the pupa, assist their parent in all her labours. Her next brood consists of large and small females and males; these appear in August or September; but, if Huber be correct ('Lin. Trans.,' vi., 285), the male eggs, or some of them at least, are laid in the spring with those that have to produce workers. We have now, then, small and large females, males, and workers, the produce of the original queen who singly began to found this establishment. It will be interesting to look a little closer into their transactions; and, first, those of the workers. These are by far the most numerous tenants of the colony, and to them is entrusted the reparation of any part by the deposition of wax, and the spreading of it in patches over the roof. When in any of the cells one of the larvæ has spun its cocoon and assumed the pupa state, it is their department to remove all the wax away from it; and after the pupa has attained its perfect state, which takes places in about five days, to cut open the cocoon, in order that the perfect insect may emerge from its imprisonment: it is theirs, moreover, to supply the young grubs with food after they have consumed the stock deposited with each egg in the cell, and regularly feed them either with honey or pollen, introduced in their proboscis through a small hole in the cover of each cell, opened as occasion may require, and carefully covered up again. As the grubs increase in size, the cells which contained them respectively become too small, and by their struggles the thin sides split; the breaches thus produced they repair with wax as fast as they occur, attentive to see where their services are required: and it is in this manner that the cells gradually acquire an increase of size to accommodate the increasing larvæ. Besides these duties, in chilly weather and at night the workers brood over the pupæ shrouded in their cocoons, in order to impart the necessary warmth and maintain a due degree of temperature. They relieve the mother-queen, in fact, of half her cares and nearly all her labour. In some nests there are from forty to sixty honey-pots, the cocoons of the bees recently emerged from their pupa condition, and more than half of these are often filled in a single day. It must not be supposed that the interior of the nest presents the same appearance as that of the hive-bee. Instead of numerous vertical combs of wax, we see either a single cluster of cells or a few irregular horizontal combs placed one above another, and supported by pillars of wax. Each layer consists of several groups of yellowish oval bodies of three different sizes, those in the middle being the largest, the whole slightly joined together by a cement of wax. These oval bodies are the silken cocoons spun by the young larvæ: some are closed at the upper extremity, some are open; the former are those which yet include their immature tenants; the latter are the empty cases from which the young bees have escaped. Besides these are the cells of wax, in which are eggs and a store of pollen and honey, but from which in due time the workers will remove the wax, the larvæ having completed their silken shroud. These larvæ, their food being exhausted, are, as we have said, regularly supplied by the workers. There are, moreover, the honey-pots, that is, the relinquished cocoons patched up and strengthened with wax and filled with nectar, and sometimes vessels of pure wax containing the same luscious store.

The workers have indeed plenty of business on their hands, and are busy all the summer long. But the winter comes, and they all perish; they have fulfilled their allotted part, and their services are no more needed. From the workers let us pass to the mother-queen, and inquire into her duties and actions. We have said that the workers are her first progeny, and we must suppose her surrounded by them. They are watching all her movements, for she is about to deposit in the cells the eggs from which the second brood is to spring; and, by a strange instinct, they endeavour to seize the eggs as soon as laid, and devour them. It is not easy to understand the object to be accomplished by this procedure on the part of the workers, unless it be to keep the population within due bounds. Be this as it may, the female has to exert herself to the utmost to prevent her eggs from being all devoured; and it is only after she has driven them back several times and utterly routed their forces, that she succeeds in accomplishing her purpose. When she has deposited her eggs in the cells (each supplied with a store of pollen moistened with honey) and closed them up with wax, she has still to keep vigilant watch over them for six or eight hours, otherwise the workers would immediately open the cells and devour their contents. After this period, strange to say, the nature of the workers seems changed; they no longer evince any appetite for devouring the eggs or destroying the cells; the female gives up her charge, committing all to their care, and they faithfully and assiduously perform the duties we have previously detailed. From these eggs proceed a few large females, to be at a future day the founders of colonies; a few males, and small females, closely resembling the workers, but attended by the males, which form their court. And now, as Huber assures us, the whole establishment is a scene of confusion; for these small females begin to prepare cells for their eggs, and this proceeding rouses the anger and jealousy of the queen-mother to the highest pitch. She assaults them with fury, driving them away; puts her head into the cells and devours their eggs, and is in turn herself assaulted and forced to retreat. They then contend among themselves for various cells, several females often endeavouring to lay their eggs at the same time in the same cell, but after a short period tranquillity seems restored. These small females all perish on the commencement of winter. Their produce consists only of males, which pair with the large females in the autumn, the latter retiring to their hybernaculum and sleeping till spring. The males are rather larger than the small females

whence they sprung, and their antennæ are longer and more slender. They are not an idle race, for Reaumur asserts that they work in concert with the rest to repair any damage that may befal their common habitation. They act in some sort as scavengers of the settlement, removing every sort of rubbish and the dead bodies of such individuals as may chance to die, but they do not forage for building materials and provisions, nor do they take any share in rearing and attending to the young.

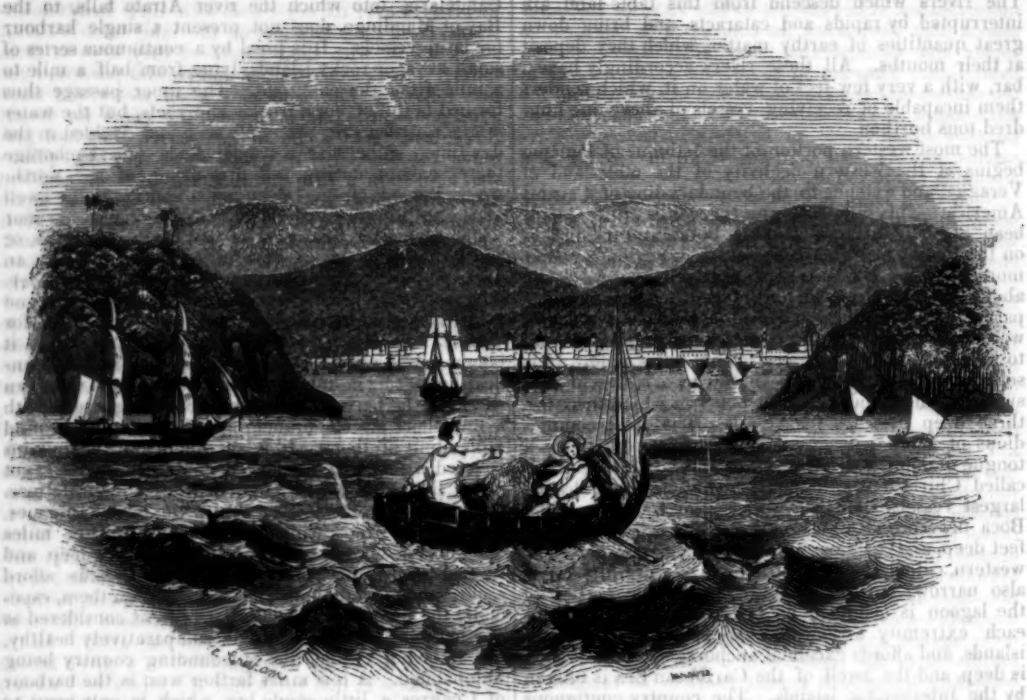
Such then is an outline of the proceedings which occur in every colony of Humble-bees, all of which, with the exception of a few large females destined to continue the race, perish at the close of autumn.

It is the opinion of Huber that the workers of the humble-bee are really females in an imperfect condition and incapable of reproduction, and that the development of the large and small females is dependent upon the nature of the food with which they are supplied during their larva condition. Kirby says, "As in the case of the Hive-bee, the food of these several individuals differs, for the grubs that will turn to workers are fed with pollen and honey mixed, while those that are destined to be males and females are fed with pure honey." It is, however, still a question to what specific cause we are to attribute, the difference between the large and the small females, which are as distinct in appearance as in habits and operations. Humble-bees may be more easily studied than either hive-bees or wasps; the two latter, and especially the wasps, being very irritable, and displaying great resentment against any intruder; while the humble-bee is indifferent to the presence of a spectator, and while collecting honey will permit itself to be touched or stroked without attempting to use its sting.

Mr. Huber relates a very amusing anecdote respecting some hive-bees paying a visit to a nest of humble-bees placed under a box not far from the hive of the former, in order to beg or steal their honey. The narration places in a strong light the good temper and generosity of the latter. The circumstance happened in a time of scarcity. "The hive-bees, after pillaging, had almost taken entire possession of the nest; some humble-bees which remained, in spite of this disaster, went out to collect provisions, and bringing home the surplus after they had supplied their own immediate wants, the hive-bees followed them and did not quit them till they had obtained the fruit of their labours. They licked them, presented to them their proboscis, surrounded them, and at last persuaded them to part with the contents of their honey-bags. The humble-bees flew away after this to collect a fresh supply. The hive-bees did them no harm, and never once showed their stings, so that it seems to have been persuasion rather than force that produced this singular instance of self-denial. This remarkable manœuvre was practised for more than three weeks, when the wasps being attracted by the same cause, the humble-bees entirely forsook the nest." The care and attention displayed by the workers towards the larvæ or young is proved by an interesting experiment conducted by M. P. Huber, and which is recorded in the 'Linnean Transactions,' vol. vi., p. 247. This observer put under a bell-glass about a dozen humble-bees, without any store of wax, along with a comb of about ten silken cocoons, so unequal in height that it was impossible the mass should stand firmly. Its unsteadiness disquieted the humble-bees extremely. Their affection for the young led them to mount upon the cocoons for the sake of imparting warmth to the inclosed little ones, but in attempting this the comb tottered so violently, that the scheme was almost impracticable. To remedy this inconvenience and to make the comb steady, they had recourse to a most ingenious expedient. Two or three bees got upon the comb, stretched themselves over its edge, and, with their heads downwards, fixed their fore-feet on the table upon which it stood, whilst with their hind-feet they kept it from falling. In this constrained and painful posture, fresh bees relieving their comrades when weary, did these affectionate little insects support the comb for nearly three days. At the end of this period they had prepared a sufficiency of wax with which they built pillars that kept it in a firm position, but by some accident afterwards these got displaced, when they had again recourse to their former manœuvre for supplying their place, and this operation they perseveringly continued, till Mr. Huber, pitying their hard case, relieved them by fixing the object of their attention firmly on the table.

Must we from these facts infer that the bees in question were guided in their operations by a process of reasoning? If so, we must admit that all the extraordinary manœuvres and labours of bees, wasps, and ants, are under the governance of the same principle; for all exhibit an appearance of forethought, and pursue the best means to produce a given result. "If," says Mr. Kirby, "in this instance these little animals were not guided by a process of reasoning, what is the distinction between reason and instinct? How could the most profound architect have better adapted the means to the end? how more dexterously *shored* up a tottering edifice, until his beams and props were in readiness?" The architect could not, perhaps, have acted better; but he would have been influenced by experience, and reasoned upon the affair. In the case of the bees they were impelled to a given labour (and perhaps in that particular instance a very useless one) by an instinctive impulse, similar to that which urges the beaver to construct his dam, and the same instinct also directed them in the mode of its accomplishment. Surely the leaf-rolling caterpillar displays quite as much apparent reason in the means it employs to shroud itself in its dormitory, or the ant-lion when he makes his pitfall. Man in his operations is guided by experience and reason; and having no natural instruments, he fabricates them, and becomes a builder, a spinner, a miner, a worker in wood and metal; he varies his plans and operations as experience may dictate, as reason may suggest; he alters, he improves. Not so the instinct-guided insect or bird: it never deviates beyond a certain point from the plan which its species time immemorial has followed; the bird that builds a pendent nest never forms one in a hollow tree: the bee never attempts to become a paper-maker, like the wasp; and here be it remembered that to whatever operations instinct urges, the animal is by nature furnished with the proper implements for accomplishing them, and that it never impels to works which the animal has not the natural means of performing or carrying on.

Youth and Age.—People place youth and age opposite to each other, as the light and shade in the day of life. But has not every day, every age, its own youth—its own new attractive life, if one only sets about rightly to enjoy them? Yes, the aged man who has collected together pure recollections for his evening companions is manifold happier than the youth who, with a restless heart, stands at the beginning of his journey. No passions disturb the evening meal of the other, no restless endeavours disturb the cheerful gossip of the evening twilight: all the comforts of life are then so thoroughly enjoyed; and we can then with more confidence cast all our cares and anxieties on God. We have then proved him.—*Mary Howitt.*



[Puerto Bello.—From an original Sketch.

JUNCTION OF THE ATLANTIC AND PACIFIC OCEANS.

[Continued from page 399.]

West of a line drawn from the vicinity of Panama to the Bay of Limones begins the third region of the isthmus, which extends westward on the Caribbean Sea to the rocky island called Escudo de Veragua, and on the Pacific to the innermost corner of the Gulf of Parita, a distance of about eighty miles. This country exhibits different natural features. It is, properly speaking, a plain which rises from both oceans with a very gentle ascent towards the middle of the isthmus. Numerous isolated hills, however, rising from three hundred to five hundred feet above their base, are dispersed over the surface of this plain. These hills occur much more frequently towards the extremities of the region near the mountains of Puerto Bello and the table-land of Veragua; in the middle of the region are plains of considerable extent, especially between the towns of Chagres and Chorrera; on these plains some isolated ridges of hills of inconsiderable height occur. The hills are generally covered with trees, but the plains and low grounds which surround them are savannahs or prairies, destitute of trees, but covered with grass, which supplies pasture to numerous herds of cattle and horses. Though the vegetation of this region is generally much less vigorous than in the country farther east, there are several cultivated tracts, and others which may be cultivated. The climate also is much more healthy, especially on the slope towards the Pacific, which in climate and season exactly resembles the country surrounding the town of Panama. The country along the shores of the Caribbean Sea is far less healthy, and the season much more irregular. Accordingly we find that the southern districts are comparatively thickly settled, while the northern are nearly uninhabited. The principal rivers of this region are the Trinidad and the Caymito or Chorrera. The Trinidad enters the Chagres about twenty-four miles from its mouth, after a course of about sixty miles. It rises near the south coast, not far from the town of Chorrera, and is navigable for a considerable distance. Traversing the isthmus in a diagonal line from south-west to north-east, the agricultural produce of the more inhabited districts is conveyed by this river to Chagres. The Caymito or Chorrera is formed by several petty streams which descend from the eastern declivity of the table-land of Veragua, and though its course is short, it is navigable to the town of Chorrera. There is a harbour at its mouth, but the anchorage is bad and exposed.

West of this region is the table-land (mesa) of Veragua. Its eastern ascent is formed by projecting mountains of great elevation, rising abruptly, and frequently exhibiting an almost perpendicular face of bare rock. The surface of the table-land itself is very uneven, and several summits on it rise to a great height. The Peak de Veragua is stated to attain nearly nine thousand feet above the sea-level. In some places, however, there are plains of considerable extent. The general elevation of this table-land above the sea-level is supposed to be between three and four thousand feet. It approaches the Caribbean Sea within a few miles, and is separated from it by a narrow and slightly hilly tract. But on the side of the Pacific the mountains approach close to the sea, and between the Gulf of Parita and the Bay of Montijo project in a wide and mountainous peninsula into the Pacific. This peninsula terminates in the capes called Punta Mala and Punta Mariata. We are very little acquainted with the climate and soil of this region, but as it undoubtedly is much more populous than the lower part of the isthmus, it must be presumed that it is favourable to agriculture and to the health of the inhabitants. This last circumstance is due to the

great elevation of the surface above the sea-level. The rivers which descend from this table-land are interrupted by rapids and cataracts, and bring down great quantities of earthy matter, which they deposit at their mouths. All these rivers accordingly have a bar, with a very few feet of water on it, which renders them incapable of receiving vessels of above one hundred tons burthen.

The most western portion of the Isthmus of Panama begins at the western declivity of the table-land of Veragua, and extends to the boundary-line of Central America. This line begins on the shores of the Caribbean Sea at Chica or Monkey Point, and terminates on the Pacific at Punta Boruca. This region is rather more than one hundred miles from east to west, and about seventy miles from north to south. The northern part is occupied by the Chiriqui Lagoon, a sheet of water ninety or one hundred miles in length from east to west, and on an average twenty miles wide. It is separated from the Caribbean Sea by a series of low, swampy, and wooded islands, between which there are three deep passages for vessels. The most commodious of these passages is the most eastern, near a tongue of land projecting from the continent. It is called Chiriqui Mouth, and may be navigated by the largest vessels. Farther west is the entrance, called Boca del Toro (Bull's Mouth), which is only eighteen feet deep, and narrow, but of easy access. The most western, called Boca del Dragon (Dragon's Mouth), is also narrow, but very deep. The middle portion of the lagoon is occupied by low woody islands, but at each extremity a considerable space is free from islands, and affords excellent anchorage, as the lagoon is deep, and the swell of the Caribbean Sea is broken by the intervening islands. The country contiguous to the southern shores of the lagoon, for a distance of about twenty miles, is low and swampy, the soil being covered with a thick layer of alluvium produced by the annual inundations during the rainy season. At the back of this low tract, which is generally wooded, the country rises, and though it contains plains of some extent, it continues to rise gradually for forty or fifty miles from the lagoon, where it is bordered by a continuous ridge of high ground. This chain, which is called the Cabecares Mountains, may be between four and five thousand feet above the sea-level, but it is of very inconsiderable width, being only about five hundred yards across in its upper part, which extends in nearly a straight line without any peaked summits. The southern slope of this ridge is much more rapid, occupying only about ten miles in width, and terminating on the Pacific in tolerably level tracts, which, however, are many feet above the level of the sea. The whole country north of the Cabecares Mountains is one continuous forest of lofty trees, but along the Pacific there are several woodless tracts. It is only in the last-mentioned district that the whites have formed a few establishments, the extensive country north of the Cabecares Mountains being in possession of the native tribes, especially the Valientes. This may be attributed to the climate, which, on the coast of the Pacific, resembles that of Panama, being subject to regular changes of the seasons, and therefore healthy. But the low country about the Lagoon of Chiriqui is drenched with rain nearly all the year round: the more elevated tract, however, between it and the Cabecares Mountains has more regular weather, and is considered tolerably healthy. The numerous rivers which run from the northern slope of the mountains into the Chiriqui Lagoon are impeded by many rapids and cataracts until they reach the low country, where their course is gentle, and where they may be navigated by large boats; but they have bars across their mouths, with little water on them.

The coast along the Caribbean Sea, from the Bay of Candelaria, into which the river Atrato falls, to the Bay of Mandingo, does not present a single harbour for large vessels. It is lined by a continuous series of small keys, or rocky islands, lying from half a mile to a mile from the continent. The inner passage thus formed is full of coral rocks and reefs, but the water is so clear that they are easily seen and avoided in the day-time. Otherwise a vessel finds safe anchorage there, except during the prevalence of the north-western winds (from December to April), as the swell of the sea is broken by the islands. The first harbour which occurs on this coast is that of Puerto Bello, or Velo, which is about two miles long, and, on an average, one thousand yards wide. It is of considerable depth, and, being surrounded by high hills and mountains, affords excellent and safe anchorage for vessels. Though it once was a place of great trade, it is now rarely visited, on account of its excessive unhealthiness. The town, which is built on the southern shores of the harbour, consists of one long street, with a few short streets branching off where the ground will admit of them. It is surrounded by mountains covered with dense forests: it contained, in 1827, not more that 1122 inhabitants, negroes and mulattoes. About twenty miles farther west is the Bay of Limones, or Puerto de Naos, which has an entrance five miles wide, free from danger. It is several miles deep, and several projecting points on its western side afford secure and commodious anchorage within them, especially the innermost, which is at present considered as the harbour. The climate is comparatively healthy, but it is not visited, the surrounding country being uninhabited. A few miles farther west is the harbour of Chagres, a little sandy bay, which is only open to westerly winds, and is formed by the mouth of the river of the same name. A ledge of rocks runs across its mouth, with not more than fifteen feet of water in the deepest place, and in many rising even to the surface. Under the most favourable circumstances no vessel drawing more than twelve feet can enter the harbour. Farther westward there is no harbour, except those afforded by the Chiriqui Lagoon.

The harbours on the shores of the Pacific are all within the Gulf of Panama. There appears to be no port west of Punta Mala. The opening of the Gulf of Panama is between Punta Francisco Salano on the continent of South America and Punta Mala, where it is about one hundred and fifty miles wide, which breadth it preserves for about ten miles northward, when it begins to contract. In the northern and narrower portion of the bay there is a group of islands, called Archipelago de las Perlas, on account of the pearls which were formerly procured in the adjacent sea in great abundance, and still are taken to a considerable amount. The largest of these islands, called Isla del Rey, rises to a considerable elevation. Most of the rivers which fall into this bay admit vessels of considerable burthen. They have, indeed, bars across their mouths, on which there is rarely more than two feet of water at low tides; but as the tides in this bay rise eighteen feet, the bars may be passed at high-water, and inside of them the harbours are deep. The rivers which are sometimes visited by vessels are the river Pacora, about eighteen miles east of the town of Panama, and the Rio Grande, which enters the sea about two miles west of that town.

Panama, the principal trading-place on this bay, stands on a tongue of land shaped nearly like a spear-head, extending a considerable distance out to sea, and gradually swelling towards the middle. The principal streets extend across the peninsula from sea to sea. The houses are of stone, generally two or three stories high, substantially built, and the larger houses have

courts or *patios*. The public edifices are—a beautiful cathedral, four convents, a nunnery of Santa Clara, and a college. As the sloping shores contiguous to the ground on which the town stands are dry at low-water to a considerable distance, the anchorage is about six or seven miles distant, where it is protected by a number of islands, the largest of which is called Perico, a name which is also applied to the harbour. These islands are high and well cultivated, and supplies of ordinary kind, including excellent water, may be obtained from most of them. In 1827 the town had nearly eleven thousand inhabitants. The harbour of Panama is usually visited by about thirty vessels, mostly from Guayaquil, Lambayeque, and Callao. They import sugar for the consumption of the country, and bullion and cacao for re-exportation. These goods are transported either on mules or by the natives on their shoulders from Panama to Cruces, on the Chagres river, where they are embarked in boats, and go down the river to Chagres.

The plans of communication proposed have been numerous, and, as may be supposed, as often prompted by the interest of particular parties as by any well-considered judgment of its being altogether the best or the easiest effected. As an instance, the 'Times' of the 12th of August last mentioned that the Mexican papers contained a long article showing the "advantage of effecting the communication by the way of Tehuantepec, rather than by that of Panama or Nicaragua." It then expatiates on the difficulties attendant on a passage across the isthmus, and concludes:—"The way by Tehuantepec seems never to have been thought of before 1842, when it was suggested by D. José Garay. The country has been surveyed at great expense, and the result is a belief that Tehuantepec will offer facilities beyond those of either of the other two places. Both on the north and on the south side are two ports which are formed by the mouths of two rivers, capable of being connected, and will admit of large vessels, while the waters flowing from a height will easily supply the canals."

The scheme is no doubt a very good scheme for Mexican interests. From the Gulf of Tehuantepec, in the North Pacific, the Chimilapa would be ascended as high as practicable, which would be connected by a canal with the Rio del Passo, a tributary to the Huasacualco, which falls into the Bay of Campeachy, in the province, and about one hundred miles north-east of the town of Vera Cruz. The Hon. P. Campbell Scarlett, notwithstanding the flourish of the Mexican paper as to the originality of the scheme, notices it in his 'Travels in South America in 1838,' and observes—"It is utterly out of the question to make it, under any circumstances, navigable for large vessels. A boat canal of communication, aided by rivers, would undoubtedly render the internal prosperity of a country where the distance from sea to sea is one hundred and fifteen geographical miles, infinitely greater than it is at present; but the realization of this project is more important to the state of Mexico than to the general interests of the commercial world." The canal would be required to be twenty miles long; the streams are winding, with occasional rapids; the harbour of the Huasacualco will at no time admit of vessels drawing ten feet of water, and Ventosa, the harbour of Tehuantepec, is only an open roadstead.

[To be continued.]

PROGRESSES OF QUEEN ELIZABETH.

No. XI.—1587-1591.

The splendid public funeral of Sir Philip Sidney, and the trial and execution of Mary, Queen of Scots, were the two chief events of the year 1587, in which Elizabeth appears to have remained either in London, Greenwich, or Richmond. In 1588, she, and every one else in the kingdom, was occupied with preparations for resisting the expected attack of the Spanish Armada. These events, even to her visit to the camp at Tilbury, belong rather to history than to an account of her Progresses, and are also too well known to require repetition. In 1589 and 1590, likewise, there were no Progresses properly so called, only a few mere visits to Walsingham at Barn Elms, Nottingham at Chelsea, and the like. On her return on some of these visits, the corporation of London met her in the suburbs: in January, 1589, for instance, the Lord Mayor issues a precept on the 28th, to the master and wardens of the Stationers' Company, requiring that "yourselves, with six of the comeliest personages of your said company, be ready at the Park Corner, above St. James's, on horseback, apparelled in velvet coats, with chains of gold, on Thursday, by two of the clock in the afternoon, to wait upon me and my brethren the aldermen to Chelsea, for the recreating of her Majesty accordingly. And also, that you provide six staff torches to light if need shall be required." The yearly justs in 1590 were rendered remarkable by the resignation of the championship by Sir Henry Lee to the Earl of Cumberland, in the presence of her Majesty. After exhibitions in the Tilt-yard, the knights advanced toward her, and she "did suddenly hear a music so sweet and secret as every one thereat greatly marvelled. And hearkening to that excellent melody, the earth as it were opening, there appeared a pavilion made of white taffeta, containing eight score ells, being in proportion like unto the temple of the Virgins Vestal. This temple seemed to consist upon pillars of porphyry, arched like unto a church: within it were many lamps burning. Also on the one side there stood an altar covered with cloth of gold, and thereupon two wax candles burning in rich candlesticks; upon the altar also were laid certain princely presents, which, after, by three virgins, were presented unto her Majesty." The presents consisted of a curiously-wrought white veil, and a cloak with buttons of gold, each button engraved with an "impress of excellent devise," and in each loop was a nobleman's badge, fixed to a pillar richly embroidered. A crowned pillar stood before the temple, and Sir Henry Lee, disarming himself, offered up his armour at the foot of it, and then, kneeling to the Queen, presented the Earl of Cumberland as his successor; who, being graciously accepted, was forthwith armed by Sir Henry, and mounted upon his own horse. To the music was sung, by "Mr. Hales, her Majesty's servant, a gentleman in that art excellent, and for his voice both commendable and admirable," the following very appropriate song, allusive to Lee's resignation and age:—

"My golden locks time hath to silver turn'd,
(Oh time too swift, and swiftness never ceasing!)
My youth 'gainst age, and age at youth hath spurn'd,
But spurn'd in vain; youth waneth by encreasing.
Beauty, strength, and youth, flowers fading been;
Duty, faith, and love, are roots and ever green.

My helmet now shall make a hive for bees,
And lovers' songs shall turn to holy psalms;
A man-at-arms must now sit on his knees,
And feed on prayers, that are old age's alms.
And so from court to cottage I depart;
My saint is sure of my unspotted heart.

And when I sadly sit in homely cell,
I'll teach my swains this carol for a song:—
Blest be the hearts that think my sovereign well;
Curs'd be the souls that think to do her wrong.
Goddess, vouchsafe this aged man his right,
To be your beadsman now, that was your knight."

In 1591 the Queen left Richmond, and visited Archbishop Whitgift, on the 11th of February, at Lambeth; and again, on the 13th, removing thence to Greenwich. On the 10th of May "the Queen came from Hackney to Theobalds," to visit Lord Burleigh, who, in consequence of the recent death of his wife, had become greatly dispirited, and wished to retire from his employments. Of this the Queen would not hear; and on this visit addressed a sort of playful ironical epistle "to the disconsolate and retired spryte, the Heremite of Tybole;" but expressing throughout her high consideration of him. The most remarkable matter, however, is a sort of interlude got up for her reception, it is conjectured, by secretary Sir Robert Cecil, Burleigh's son, though written by John Davies, which for gross flattery surpasses most of those, fulsome as they were, with which she was commonly addressed. We give the whole as a curiosity in the history of social manners:—

"A conference between a gentleman-usher and a post [messenger] before the Queen at Mr. Secretary's house.

"*P.* Is Mr. Secretary Cecil here? did you see Mr. Secretary? Gentlemen, can you bring me to Mr. Secretary?

"*U.* Mr. Secretary Cecil is not here. What business have you with him?

"*P.* Marry, sir, I have letters that import her majesty's service.

"*U.* Then you were best stay till he come; he was here even now, and will be again by-and-bye, if you have the patience to stay awhile.

"*P.* Stay! The matter requires such post-haste, as I dare not for my life stay anywhere till I have delivered all my letters; therefore, I pray, direct me where I may find him, for without doubt it is business that especially concerns the Queen's service.

"*U.* What a business is here with you. If the letters concern the Queen, why should not you deliver them to the Queen? You see she is present, and you cannot have a better opportunity, if the intelligence be so important, and concern herself, as you say.

"*P.* I cannot tell what I should do: they concern the Queen's service indeed; but they tell me they ought to be delivered to one of them to whose place it is proper to receive them.

"*U.* Queen's service! Post: what talk you? I know not what you think, but I am sure the world thinks she doth herself best service when all is done, for all her morose servants; though I confess (for honour's sake) all great princes must have attendants for their businesses.

"*P.* Is it so? Why, then, I pray thee, tell me what use doth she make of her servants?

"*U.* She makes the same use of them as the mind makes of the senses. Many things she sees and hears through them, but the judgment and election is her own.

"*P.* If, then, the use of their service be so small, how comes it that the reward of their service is so great?

"*U.* Oh, therein she respecteth her own greatness and goodness, which must needs be such as it is, though it find no object that is proportionable; as, for example, the sun doth cast his beams upon dark and gross bodies that are not alike capable of his light, as well as upon clear and transparent bodies which do more multiply his beams. Or if thou dost not understand this demonstration, I will give thee one that is more familiar. She doth in this resemble some gentle mistress of children, who, when they guide the hands of their scholars with their own hands, and thereby do make them to write fair letters, do yet to encourage them give them as much praise as if themselves had done it without direction.

"*P.* Well, I am half persuaded to deliver the letters to her own hand; but, sir, they come from the Emperor of China, in a language that she knows not.

"*U.* Why, then, you were very simple, Post: though it be so, yet these princes (as the Great Turk and the rest) do always send a translation in Italian, French, Spanish, or Latin, and then all is one to her.

"*P.* Doth she understand these languages, and never crossed the seas?

"*U.* Art thou a post, and hast ridden so many miles, and met with so many men; and hast thou not heard that all the world knows that she speaks and understands all the languages in the world which are worthy to be spoken or understood?

"*P.* It may be she understands them in a sort; well for a lady, but not so well as secretaries should do, that have been great travellers; and it is the part of every secretary's possession [? profession] to understand so many languages.

"*U.* Tush! what talkest thou of secretaries? As for one of them, whom thou most askest for, if he have anything that is worth talking of, the world knows well enough where he had it, for he kneels every day where he learns a new lesson: go on, therefore, deliver thy letters; I warrant thee she will read them if they be any Christian language.

"*P.* But is it possible that a lady born and bred in her own island, having but seen the confines of her own kingdom, should be able without interpreters to give audience, and answer still to all foreign ambassadors?

"*U.* Yea, Post; we have seen that so often tried, that it is here no wonder. But, to make an end, look upon her. How thinkest thou; dost thou see her? Say truly, sawest thou ever more majesty or more perfection met together in one body? Believe me, Post, for wisdom and policy she is as inwardly suitable as externally admirable.

"*P.* Oh! sir; why now I stand back the rather, you have so daunted my spirits with that word; for, first, you say she hath majesty, and that, you know, never likes audacity. Next, you say she is full of policy; now, what do I know, if policy may not think fit to hang up a Post if he be too saucy? No; I have learned a better lesson at a grammar-school: non est bonum ludere cum sanctis. Farewell, good sir: I will go to one of the secretaries, come what will of it.

"*U.* Ah! simple Post, thou art the wilfullest creature that liveth. Dost thou not know that beside all her perfections, all the earth has not such a Prince for affability; for all is one, come gentleman, come servingman, come ploughman, come beggar, the hour is yet to come that ever she refused petition. Will she then refuse a letter when that comes from so great an Emperor, and for her service? No, no! do as I bid thee; I should know something, that have been a quarter-master these fifteen years; draw near her, kneel down before her, kiss thy letters, and deliver them, and use no prattling while she is reading; and if ever thou have worse words than 'God have mercy, fellow,' and 'Give him a reward,' never trust me while thou livest.

"*P.* Well, God bless me, and God save her. Even God's will be done. I am half of thy belief, and I will prove my destiny. Fair Queen, here are letters from the Emperor of China, who doth salute you, and I, your vassal, am joyful to see you, who never saw your Majesty, neither in the East Indies nor in the West, nor any country where there is neither man or beast."

"These things to hear," the heaping on of all sorts of accomplishments—affability, wisdom, policy, but above all, the majesty and perfection met together in one externally admirable body,—"did the Queen seriously incline." The Cecils were certainly eminent as statesmen in its highest sense; they were hardly less

distinguished as courtiers in its lowest, and they evidently knew and endeavoured to gratify the coarse and insatiable appetite of their sovereign for flattery. Of this they gave other proofs in the reign of Elizabeth's successor.

On the 10th of July she was still with Lord Burleigh, but at his residence in town, Burleigh House, afterwards Exeter Change, whither she went to see the Earl of Essex's house in Covent Garden; and on the same day Lord Hunsdon, her chamberlain, wrote to Sir William More, bidding him prepare for another visit on her way to Portsmouth. He says, "She is very desirous to go to Portsmouth and Cowdray, if it be possible, but none of us all can set her down anywhere to lie at between your house and Cowdray." This is a curious difficulty, and affords a striking proof of the bad state of the roads, as Cowdray is little more, if any, than twenty miles distant from Loseley. But the Chamberlain adds, "Though she cannot pass by Petworth and Cowdray, yet she will assuredly come to your house, and so towards Portsmouth such other way as shall be set down to her." We have no particulars of the visit, but she did go to Sir William's and thence to Cowdray, dining at the Farnham Castle, the residence of the Bishop of Winchester, on her way. Her magnificent reception at Cowdray we must leave for another opportunity.

Whirlpool of Charybdis.—The agitation of the waters which is constantly observed near Messina, and which is usually designated the whirlpool of Charybdis, is now well known to be unaccompanied by any vortiginous motion by which vessels might be absorbed, and is, rather, an incessant undulation of the water. The agitation is said to exist in several different places at the same time, within the circumferences of circles whose diameters, when the wind is moderate, do not exceed one hundred feet, and is caused by the wind acting obliquely on the rapid current which sets towards the faro, or lighthouse, from the north during six hours, and from the south during the next six hours, and so on alternately; the changes taking place respectively with the rising and setting of the moon. Spallanzani, who was rowed over the spot when the wind was light, experienced no danger, though the boat was much tossed by the waves: he was informed, however, that when the wind is high the swelling of the waves is more violent and extensive, so that small vessels which are driven within the limits of the agitation may be sunk by the waves breaking over them, and large ones may be driven on the Italian shore, where they are sometimes wrecked on the rock of Scylla. The dashing of the waves on the hollow rocks about Cape Peloro produces a noise which is said to resemble the barking of dogs; and it is probable that these sounds gave rise to the fable that a female monster, surrounded by ferocious dogs and wolves, lay there in wait to devour the mariners who might be wrecked on the coast.—*Penny Cyclopædia.*

Parmesan Cheese.—The Lodigiano, the country about Lodi, is the native seat of the cheese called Parmesan, but which is almost wholly made in this district: the Perminiani, however, having been the first to export the article, it acquired their name. Others, on the contrary, say that a princess of Parma having introduced it at the French table, it received its denomination from *her* excellency, as well as *that* of the cheese. The French *gastronomes* maintain that it is with cheese as with wine, namely, that each species has its own *smack*, which cannot be produced elsewhere, resulting partly from natural causes and partly from the mode of manipulation; but that in cheese the co-operating causes are much more numerous than in wine; the nature of the soil, the plants upon which the cows feed, the water they drink, the air they breathe, the construction of the cow-house, the quality of the rennet, nay even the complexion of the dairymaid, are all efficient causes. To carry on the business of a cheese-dairy to advantage, the milk of at least fifty cows is needed; but the land being very much divided into small holdings, many of the farmers have not a sufficient extent of pasturage. They therefore join with their neighbours in a kind of partnership, the milk being brought into a common dairy, where it is kept in very large copper vessels, and the produce divided. The deep yellow colour is given by saffron. The pasturage is most rich: when cut for hay it gives three crops in the year.—*Murray's Handbook of Italy.*

Calls of American Birds.—If superstition takes alarm at our familiar and simple species, what would be thought by the ignorant of a South American kind, large as the Wood-Owl, which, in the lonely forests of Demerara, about midnight breaks out, lamenting like one in deep distress, and in a tone more dismal even than the painful hexachord of the slothful Aï. The sounds, like the expiring sighs of some agonizing victim, begin with a high loud note, *ha, ha, ha ha ha! ha! ha!* each tone falling lower and lower, till the last syllable is scarcely heard, pausing a moment or two between this reiterated tale of seeming sadness. Four other species of the Goatsucker, according to Waterton, also inhabit this tropical wilderness, among which also is included the *Whip-poor-Will.* Figure to yourself the surprise and wonder of the stranger who takes up his solitary abode for the first night amidst those awful and interminable forests, when, at twilight, he begins to be assailed familiarly with a spectral equivocal bird, approaching within a few yards, and then accosting him with *who-are-you, who-who-who-are-you?* Another approaches and bids him, as if a slave under the lash, *work-away, work-work-work-away;* a third mournfully cries *willy-come-go! willy-willy-willy-come-go!* and as you get among the highlands, our old acquaintance vociferates *whip-poor-will, whip-whip-whip-poor-will!* It is therefore not surprising that such unearthly sounds should be considered in the light of supernatural forebodings issuing from spectres in the guise of birds.—*Nuttall's Manual of the Ornithology of the United States and of Canada.*

Crab-catching on the Scottish Coast.—We soon perceived two men in a small craft: their little boat hung motionless on the then waveless mirror of the bay, in about ten feet depth of water; and after for a minute or thereby holding their faces close upon the surface, they seemed suddenly to pull a long pole out of the water, with something adhering to its extremity. We soon found that they were taking advantage of the glassy stillness of the water, to overlook the early walk of the crabs. They no sooner saw these crusty crustaceans on the subaqueous sand, than they poked them behind with their long staves: the crabs turned round and seized upon the poles. These latter were slightly shaken by the fishermen, as if in pain or terror; the angry creatures clung all the closer, and were then rapidly hoisted into the boat.—*Wilson's Voyage round the Coast of Scotland.*

Serpent-Charmer.—One of these jugglers, or charmers, was by far the most expert and daring fellow I had seen perform with snakes; and he completely astonished us by the manner in which he pulled about, and treated with the greatest indifference and coolness, a very fine Cobra de capello, or Noya, as the Kandyans call it, about three feet and a half long, which he had brought with him. He handled it with great roughness, yet perfect confidence: he also struck and threatened it in so daring a way, that at last I suspected its poison-fangs had been broken or extracted; but this I found was not the case; for after he had taken much pains in order to irritate it, and soothe it when enraged, and had even put it into his bosom, I told one of the servants to desire him to open its mouth—not expecting that he would do so—and show me whether the poison-fangs were extracted or not. He did so without the least hesitation; and there they certainly were, and in the most perfect state! Indeed I confess that, in even going up to examine them, a strange sort of thrilling sensation ran through my whole frame, at the idea of being bitten by such a terrible yet beautiful creature. I then desired the servant to ask him if the snake would bite me if I touched it. He instantly replied, that it certainly would do so; and, seemingly afraid lest I should venture too near it, he, in great haste, put it back into the bag in which he had brought it.—*Lieut.-Col. Campbell's Excursions, Adventures, and Field-Sports in Ceylon.*